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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,902	12/21/2000	Junichi Asada	201163US2S	6347

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EXAMINER	
CHU, CHRIS C	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/740,902	ASADA, JUNICHI	
	Examiner	Art Unit	
	Chris C. Chu	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29,31 and 37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29,31 and 37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on February 15, 2005 has been received and entered in the case.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugano et al. '888 in view of Fujimori (U. S. Pat. No. 6,084,291).

Regarding claim 29, Sugano et al. discloses in e.g., Figs. 6, 7, 16 and 18 a semiconductor apparatus (e.g., 15d) comprising:

- a semiconductor device (e.g., 49d);
- a plurality of lead wires (lead wires that are adjacent the dummy lead wires 69c and the lead wires 67c and 68c) connected to a plurality of connecting electrodes (58) formed on said semiconductor device;
- at least a pair of dummy lead wires (69c) that are not electrically connected to said semiconductor device and do not include an outer lead portion for

electrically connecting said semiconductor device to an external circuit of said semiconductor device;

- an insulating film (62c or 9c in Fig. 6 and column 5, lines 63 - 67) having an opening portion configured to accommodate said semiconductor device and to support said plurality of lead wires connected to the plurality of connecting electrodes of the semiconductor device and said at least the pair of dummy lead wires, said opening portion having a plurality of sides that define a perimeter of said opening portion; and
- a resin molding (8a, column 5, lines 59 – 61 and column 26, lines 47 – 57) configured to cover a connecting portion between tip portions of the plurality of lead wires and the plurality of connecting electrodes and the tip portion of said at least the pair of dummy lead wires within the opening of said insulating film;
- wherein one and the other of said at least the pair of dummy lead wires (69c) are provided on one side and an opposite side of said plurality of sides of said insulating film, respectively, each of the one and the other of said at least the pair of dummy lead wires being arranged in corresponding first and second spaces defined by first and second two adjacent lead wires (lead wires that are adjacent the dummy lead wires 69c and the lead wires 67c and 68c) of said plurality of lead wires, respectively, so that a length of each of said first and second spaces is at least twice a minimum pitch between adjacent lead wires of said plurality of lead wires, said first two adjacent lead wires being provided on said one side of said insulating film to define said first space on

said one side of said insulating film, and said second two adjacent lead wires being provided on said opposite side of said insulating film to define said second space on said opposite side of said insulating film.

However, Sugano et al. does not disclose the location of the one of the pair of dummy lead wires being placed on the opposite side surface of the plural side surfaces of said insulating film to correspond to the other one of the pair of dummy lead wires and tip portion of the at least the pair of dummy wires extending over the semiconductor device. Fujimori teaches in e.g., Fig. 1 a location of one (34a; column 11, line 10) of a pair of dummy lead wires (34a at the top and 34a at the bottom) being on the opposite side surface of the plural side surfaces of a insulating film (28; column 10, line 62 and column 7, lines 44 – 47) to correspond to the other one (the 34a at the top) of the pair of dummy lead wires (34a at the bottom) and tip portion of the at least the pair of dummy wires (34a) extending over a semiconductor device (36; column 11, line 14). Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Sugano et al. by placing the one of the pair of dummy lead wires being placed on the opposite side surface of the plural side surfaces of said insulating film to correspond to the other one of the pair of dummy lead wires and using the tip portion of the at least the pair of dummy wire extending over the semiconductor device as taught by Fujimori. The ordinary artisan would have been motivated to modify Sugano et al. in the manner described above for at least the purpose of reducing the shrinkage of the tape carrier and preventing breakage of inner leads due to the shrinkage of the tape carrier (column 11, lines 35 – 37).

4. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugano et al. and Fujimori as applied to claim 29 above, and further in view of Walter '640.

Sugano et al. and Fujimori disclose the claimed invention except for the thickness of the semiconductor chip being approximately 50 μm. Walter teaches in e.g., Fig. 1, column 1, lines 41 – 45 and column 3, lines 42 – 43 a semiconductor chip (30) in which a semiconductor device is formed has a thickness of approximately 50 μm. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to further modify Sugano et al. by using the thickness of the semiconductor chip to be approximately 50 μm as taught by Walter. The ordinary artisan would have been motivated to further modify Sugano et al. in the manner described above for at least the purpose of (1) increasing heat dissipation, (2) reducing size and weight of the package, (3) providing an increased density of conductive lines and (4) providing microscopic thicknesses of the chips (column 1, lines 48 – 49).

5. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugano et al. and Fujimori as applied to claim 29 above, and further in view of Lamson et al. '220.

Sugano et al. and Fujimori disclose the claimed invention except for the tip portions of the at least a pair of dummy wires being connected to each other over the semiconductor device. Lamson et al. teaches in e.g., Fig. 3 the tip portions of the at least a pair of dummy wires (dummy wires at the top of the Fig. 3 to form " ⊔ "shape) being connected to each other over the semiconductor device (40). Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to further modify Sugano et al. by using the " ⊔ "shaped dummy wires for the connected tip

portions of the two dummy wires as taught by Lamson et al. The ordinary artisan would have been motivated to further modify Sugano et al. in the manner described above for at least the purpose of (1) preventing the insulating film from peeling off from the semiconductor chip, (2) increasing in the number of points of contact between the insulating film and the chip, (3) increasing heat dissipation efficiency as a method of increasing the reliability of metal leads, (4) increasing dispersion of stress, (5) reducing turbulence in the flow of resin to decrease voids when the resin is injected on the surface of the package and (6) providing added support to the encapsulated package (column 4, lines 1 – 2).

Response to Arguments

6. Applicant's arguments, see page 5, paragraphs two – four, filed on February 15, 2005, with respect to the rejection of claim 29 under 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of newly found prior art reference (Fujimori).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 517-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chris C. Chu
Examiner
Art Unit 2815

c.c.
Thursday, May 05, 2005

GEORGE ECKERT
PRIMARY EXAMINER